SRS

information & insight

Environmental Restoration

The Savannah River Site (SRS) Environmental Restoration Program achieves results. Of the 500 acres in the program, more than 340 acres are in interim or final remediation. One-half of the total 515 waste units are closed, in remediation or have been submitted for no further action; 4 billion gallons of groundwater have been remediated, and 925,000 pounds of solvents have been removed.

Over $50 million in cost efficiencies have been achieved in the last four years. The SRS Environmental Restoration Program is a leader in field remediation, deployment of new technologies, cost-effectiveness, meeting regulator commitments, and working safely.

SRS began its environmental restoration efforts in 1981 with an inventory of waste sites. By 1984, the site had closed and capped seven chemical, metal and pesticides pits. Solvent cleanup from groundwater began during this time. Today, the ER program continues to work with the Department of Energy (DOE), prioritizing and accelerating cleanup of inactive waste sites. Experience and expertise are now share routinely with other DOE offices across the nation. Innovation and new technology are highly valued.

Field Remediation

From capping waste sites to installing more efficient groundwater treatment units, the program keeps fieldwork—getting the job done—a top priority. Eighteen waste units, covering approximately 170 acres, have been remediated and closed under our Resource Conservation and Recovery (RCRA) permit, settlement agreements, consent decrees, and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA):

Mixed Waste Management Facility
M Area Settling Basin and Lost Lake
H Area Seepage Basins
Tritiated waste-oil storage tank in C Area
Low Level Radioactive Waste Disposal Facility
Nonradioactive Waste Disposal Facility
F Area Seepage Basins
Metallurgical Laboratory Basin
Acid Caustic Basins (4)
D-Oil Seepage Basin

There are approximately 40 sites in the remediation phase including both field work and remedial design. Current field work includes In Situ Soil Stabilization and Low Permeability Soil Cover at the Old F-Area Seepage Basin, L Oil and Chemical Basin and F-Retention Basin. Major groundwater cleanup systems are now operating in A, F, H, TNX areas, as well as at the C Reactor Seepage Basin and Nonradioactive Waste Disposal Facility.

Technology Deployment

State-of-the-art technology is used to increase remediation efficiency. Geosynthetic cap closure technology, which is more effective and cost efficient than traditional kaolin clay capping, is now being used at some waste sites as the protective cover over waste sites to prevent rain water infiltration.

The use of vacuum extraction technology has accelerated groundwater cleanup in A&M area since 1995. BaroBall™, a passive remediation device designed by Savannah River Technology Center researchers, has been deployed in A/M area to remove contaminants from the subsurface using natural atmospheric pressure fluctuations. Horizontal wells using have been installed at the Nonradioactive Waste Disposal Facility as part of a large bioremediation system to destroy solvent contamination.

An integrated system (Air Sparging and Soil Vapor Extraction) has been installed at the C Area Burning Rubble Pit that strips solvent contamination from groundwater and then vacuums the contamination from the soil.

SRS has initiated a Technical Program Plan to find solutions to remediate Dense Non-Aqueous Phase Liquids (DNAPLs). The program will expedite the development, and demonstration of innovative technologies for characterization and remediation of DNAPLs.

Plans are to use additional Passive Technologies such as Phytoremediation and Monitored Natural Attenuation. These efforts are more cost effective in long term surveillance and monitoring.

Cost-Effective Management

Through the use of innovative technologies, fixed-price subcontracting and streamlining, significant cost efficiencies have been produced. The total life cycle savings from new technology is over $200 million. Some examples include:

- The cost savings associated with using geosynthetic caps are estimated at $100,000 per acre over the life of the caps.
- The Portable Sodium Iodide Gamma Probe has potential cost savings of $3 million per acre for vegetation characterization.
- A cost program for using vendor manufactured prefabricated radiological contaminants (radiological huts, windbreaks, glove bags) resulted in savings of over $7 million dollars, the largest single savings of this type in any government program.
- Cost efficiencies are estimated at $11 million for the Coal Pile Runoff Basins project. These savings are being applied to the remediation of other waste sites.
- Savings of approximately $1 million dollars per year is projected in FY00 and beyond as a result of consolidating Operations and Maintenance activities within the ER division.
- An innovative monitoring well purging mechanism, designated the Purge Water Management System (PWMS) has been developed and successfully demonstrated at SRS. Cost-savings projected to result from the use of the PWMS and Groundwater Sampling Reduction activities amount to more than $1 million annually.

Regulatory Commitment

SRS works closely with state and federal regulators to prioritize, schedule, and select cleanup activities. Thesite's 515 waste sites range in size from a few cubic feet of ground to tens of acres, and the waste types

found in the units include solid waste, radioactive waste, hazardous waste and mixed waste (a mixture of hazardous and radioactive waste). Two major federal statutes govern how waste is handled at SRS.

The Resource Conservation and Recovery Act (RCRA) establishes a system for tracking and managing hazardous wastes from generation to disposal. This act also requires corrective action for releases of hazardous waste at active or inactive waste units and treatment, storage, or disposal facilities.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA-also known as Superfund) addresses the protection and cleanup of the environment. This act establishes a National Priorities List of sites targeted for assessment and, if necessary, restoration. SRS was placed on this list December 21, 1989.

In addition, the DOE has entered the Federal Facility Agreement (FFA) with the U.S. Environmental Protection Agency (EPA) Region IV and the South Carolina Department of Health and Environmental Control (SCDHEC). The FFA, effective August 16, 1993, specifies how SRS will address contamination or potential contamination at waste units to meet RCRA and CERCLA requirements. This agreement is required under CERCLA.

SRS works closely with state and federal regulators to determine which waste units require cleanup. If preliminary evaluations show that a waste unit may be a candidate for cleanup, it undergoes investigation and characterization. The investigation phase begins with looking at existing unit data, then developing a work plan that prescribes how to characterize the unit. If the investigation finds that there is a risk to human health or the environment, cleanup alternatives are evaluated, selected (with public input) and implemented.

This investigation may find that a waste unit does not pose a significant risk to human health or the environment. If EPA and SCDHEC agree with this finding, with acceptance by the public, no further action is needed on that waste unit.

Public Involvement

When a unit has been fully characterized, cleanup alternatives are evaluated, and a preferred method is selected, SRS then holds a public comment period to solicit input. The site also solicits comments from its Citizens Advisory Board. This independent group regularly makes recommendations to the DOE, EPA and SCDHEC regarding remediation actions and prioritization of waste units. After public comments have been considered, a record of decision is issued, specifying the remediation method.

Safety

Safety in the Environmental Restoration Division is a shared value for the safety of ourselves, coworkers, families and communities. There continues to be a record setting safety performance, including over one thousand consecutive days worked on projects and operations without a lost workday case.

The Savannah River Site is owned by the Department of Energy's Savannah River Operations Office and managed by a team of companies lead by Westinghouse Savannah River Company. For additional information, contact:

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